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ABRAM S. HEWITT,

ON THE OCCASION OF THE

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New York and Brooklyn Bridge,

MAY 24th, 1883.

NEW YORK:
John Polhemus, Printer and Mfg. Stationer, 102 Nassau Street.
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Two hundred and seventy years ago the good ship "Tiger," commanded by Captain Adraien Block, was burned to the water's edge, as she lay at anchor, just off the southern end of Manhattan Island. Her crew, thus forced into winter quarters, were the first white men who built and occupied a house on the land where New York now stands; "then," to quote the graphic language of Mrs. Lamb, in her history of the City, "in primeval solitude, waiting till commerce should come and claim its own. Nature wore a hardy countenance, as wild and as untamed as the savage landholders. Manhattan's twenty-two thousand acres of rock, lake and rolling table land, rising at places to a height of one hundred and thirty-eight feet, were covered with sombre forests, grassy knolls and dismal swamps. The trees were lofty; and old, decayed and withered limbs contrasted with the younger growth of branches; and wild flowers wasted their sweetness among the dead leaves and uncut herbage at their roots. The wanton grape vine swung carelessly from the topmost boughs of the oak and the sycamore; and blackberry and raspberry bushes, like a picket guard, presented a bold front in all possible avenues of approach. The entire surface of the island was bold and granitic, and in profile resembled the cartilaginous back of the sturgeon."

This primeval scene was the product of natural forces working through uncounted periods of time; the continent slowly rising and falling in the sea like the heaving breast of a world asleep; glaciers carving patiently through ages the deep estuaries; seasons innumerable clothing the hills with alternate bloom and decay.

The same sun shines to-day upon the same earth; yet how transformed! Could there be a more astounding exhibition of the power of man to change the face of nature, than the panoramic view which presents itself to the spectator standing upon the crowning arch of the bridge, whose completion we are here to-day to celebrate in the honored presence of the President of the United States, with their fifty millions; of the Governor of the State of New York, with its five millions; and of the Mayors of the two cities, aggregating over two million of inhabitants? In the place of stillness and solitude, the footsteps of these millions of human beings; instead of the smooth waters "unvexed by any keel," highways of commerce ablaze with the flags of all the nations; and where once was the green monotony of forested hills, the piled and towering splendors of a vast metropolis, the countless homes of industry, the echoing marts of trade, the gorgeous palaces of luxury, the silent and steadfast spires of worship!

To crown all, the work of separation wrought so surely, yet so slowly, by the hand of time, is now reversed in our own day, and "Manahatta" and "Seawanhaka" are joined again, as once they were before the dawn of life in the far azoic ages.

"It is done!
Clang of bell and roar of gun
Send the tidings up and down.
How the belfries rock and reel!
How the great guns, peal on peal,
Fling the joy from town to town!"

"What hath God wrought!" were the words of wonder, which ushered into being the magnetic telegraph, the greatest marvel of the many marvelous inventions of the present century. It was the natural impulse of the pious maiden who chose this first message of reverence and awe, to look to the Divine Power as the author

of a new gospel. For it was the invisible, and not the visible agency, which addressed itself to her perceptions. Neither the bare poles nor the slender wire, nor the magnetic battery, could suggest an adequate explanation of the extinction of time and space which was manifest to her senses, and she could only say, "What hath God wrought!"

But when we turn from the unsightly telegraph to the graceful structure at whose portal we stand, and when the airy outline of its curves of beauty, pendant between massive towers suggestive of art alone, is contrasted with the over-reaching vault of heaven above and the ever moving flood of waters beneath, the work of omnipotent power, we are irresistibly moved to exclaim, What hath *man* wrought!

Man hath indeed wrought far more than strikes the eye in this daring undertaking, by the general judgment of engineers, without a rival among the wonders of human skill. It is not the work of any one man or of any one age. It is the result of the study, of the experience, and of the knowledge of many men in many ages. It is not merely a creation; it is a growth. It stands before us to-day as the sum and epitome of human knowledge; as the very heir of the ages; as the latest glory of centuries of patient observation, profound study and accumulated skill, gained, step by step, in the never-ending struggle of man to subdue the forces of nature to his control and use.

In no previous period of the world's history could this bridge have been built. Within the last hundred years the greater part of the knowledge necessary for its erection has been gained. Chemistry was not born until 1776, the year when political economy was ushered into the world by Adam Smith, and the Declaration of Independence was proclaimed by the Continental Congress, to be main-

tained at the point of the sword by George Washington. In the same year Watt produced his successful steam engine, and a century has not elapsed since the first specimen of his skill was erected on this continent. The law of gravitation was indeed known a hundred years ago, but the intricate laws of force, which now control the domain of industry, had not been developed by the study of physical science, and their practical applications have only been effectually accomplished within our own day, and indeed, some of the most important of them during the building of the bridge. For use in the caissons, the perfecting of the electric light came too late, though happily in season for the illumination of the finished work.

This construction has not only employed every abstract conclusion and formula of mathematics, whether derived from the study of the earth or the heavens, but the whole structure may be said to rest upon a mathematical foundation. The great discoveries of chemistry, showing the composition of water, the nature of gases, the properties of metals; the laws and processes of physics, from the strains and pressures of mighty masses, to the delicate vibrations of molecules, are all recorded here. Every department of human industry is represented, from the quarrying and the cutting of the stones, the mining and smelting of the ores, the conversion of iron into steel by the pneumatic process, to the final shaping of the masses of metal into useful forms, and its reduction into wire, so as to develop in the highest degree, the tensile strength which fits it for the work of suspension. Every tool which the ingenuity of man has invented, has somewhere, in some special detail, contributed its share in the accomplishment of the final result.

"Ah! what a wondrous thing it is
To note how many wheels of toil
One word, one thought can set in motion."

But without the most recent discoveries of science, which have enabled steel to be substituted for iron —applications made since the original plans of the bridge were devised—we should have had a structure fit, indeed, for use, but of such moderate capacity that we could not have justified the claim which we are now able to make, that the cities of New York and Brooklyn have constructed, and today rejoice in the possession of, the crowning glory of an age memorable for great industrial achievements.

This is not the proper occasion for describing the details of this undertaking. This grateful task will be performed by the engineer in the final report, with which every great work is properly committed to the judgment of posterity. But there are some lessons to be drawn from the line of thought I have followed, which may encourage and comfort us as to the destiny of man, and the outcome of human progress.

What message, then, of hope and cheer does this achievement convey to those who would fain believe that love travels hand in hand with light along the rugged pathway of time? Have the discoveries of science, the triumphs of art, and the progress of civilization, which have made its accomplishment a possibility and a reality, promoted the welfare of mankind, and raised the great mass of the people to a higher plane of life?

This question can best be answered by comparing the compensation of the labor employed in the building of this bridge, with the earnings of labor upon works of equal magnitude in ages gone by. The money expended for the work of construction proper on the bridge, exclusive of land damages and other outlays, such as interest, not entering into actual cost, is nine million ($9,000,000) dollars. This money has been distributed in num-

berless channels—for quarrying, for mining, for smelting, for fabricating the metals, for shaping the materials, and erecting the work, employing every kind and form of human labor. The wages paid at the bridge itself may be taken as the fair standard of the wages paid for the work done elsewhere. These wages are :

		Average.
Laborers	$1 75	per day.
Blacksmiths	3 50 to $4 00	do.
Carpenters	3 00 to 3 50	do.
Masons and stonecutters	3 50 to 4 00	do.
Riggers	2 00 to 2 50	do.
Painters	2 00 to 3 50	do.

Taking all these kinds of labor into account, the wages paid for work on the bridge will thus average $2.50 per day.

Now if this work had been done at the time when the Pyramids were built, with the skill, appliances and tools then in use, and if the money available for its execution had been limited to nine million ($9,000,000) dollars, the laborers employed would have received an average of not more than two cents per day, in money of the same purchasing power as the coin of the present era. In other words, the effect of the discoveries of new methods, tools and laws of force, has been to raise the wages of labor more than an hundred fold, in the interval which has elapsed since the Pyramids were built. I shall not weaken the suggestive force of this statement by any comments upon its astounding evidence of progress, beyond the obvious corollary, that such a state of civilization as gave birth to the Pyramids would now be the signal for universal bloodshed, revolution, and anarchy. I do not under estimate the hardships borne by the labor of our time. They are, indeed, grievous, and to lighten them is, as it should

be, the chief concern of statesmanship. But this comparison proves that through forty centuries, these hardships have been steadily diminished; that all the achievements of science, all the discoveries of art, all the inventions of genius, all the progress of civilization, tend by a higher and immutable law to the steady and certain amelioration of the condition of society. It shows that, notwithstanding the apparent growth of great fortunes, due to an era of unparalleled development, the distribution of the fruits of labor is approaching from age to age to more equitable conditions, and must, at last, reach the plane of absolute justice between man and man.

But this is not the only lesson to be drawn from such a comparison. The Pyramids were built by the sacrifices of the living for the dead. They served no useful purpose, except to make odious to future generations the tyranny which degrades humanity to the level of the brute. In this age of the world such a waste of effort would not be tolerated. To-day the expenditures of communities are directed to useful purposes. Except upon works designed for defence in time of war, the wealth of society is now mainly expended in opening channels of communication for the free play of commerce, and the communion of the human race. An analysis of the distribution of the surplus earnings of man after providing food, shelter and raiment, shows that they are chiefly absorbed by railways, canals, ships, bridges and telegraphs. In ancient times these objects of expenditure were scarcely known. Our bridge is one of the most conspicuous examples of this change in the social condition of the world, and of the feeling of men. In the middle ages cities walled each other out, and the fetters of prejudice and tyranny held the energies of man in hopeless bondage. To-day, men and nations seek free intercourse with each other, and much of the

force of the intellect and energy of the world is expended in breaking down the barriers established by nature, or created by man, to the solidarity of the human race.

And yet in view of this tendency, the most striking and characteristic feature of the nineteenth century, there still are those who believe and teach that obstruction is the creator of wealth; that the peoples can be made great and free by the erection of artificial barriers to the beneficent action of commerce, and the unrestricted intercourse of men and nations with each other. If they are right, then this bridge is a colossal blunder, and the doctrine which bids us to love our neighbors as ourselves is founded upon a misconception of the divine purpose.

But the bridge is more than an embodiment of the scientific knowledge of physical laws, or a symbol of social tendencies. It is equally a monument to the moral qualities of the human soul. It could never have been built by mere knowledge and scientific skill alone. It required in addition, the infinite patience and unwearied courage by which great results are achieved. It demanded the endurance of heat, and cold, and physical distress. Its constructors have had to face death in its most repulsive form. Death, indeed, was the fate of its great projector, and dread disease the heritage of the greater engineer, who has brought it to completion. The faith of the saint, and the courage of the hero, have been combined in the conception, the design and the execution of this work.

Let us then record the names of the engineers and foremen who have thus made humanity itself their debtor, for a successful achievement, not the result of accident or of chance, but the fruit of design, and of the consecration of all personal interest to the public weal. They are: John A. Roebling, who conceived the project and formulated

the plan of the bridge; Washington A. Roebling, who, inheriting his father's genius, and more than his father's knowledge and skill, has directed the execution of this great work from its inception to its completion; aided in the several departments by Charles C. Martin, Francis Collingwood, William H. Payne, George W. McNulty, Wilheim Hilderbrand, Samuel R. Probasco as assistant engineers; and as foremen by E. F. Farrington, Arthur V. Abbott, William Van der Bosch, Charles Young, and Harry Tupple, who, in apparently subordinate positions, have shown themselves peculiarly fitted to command, because they have known how to serve. But the record would not be complete without reference to the unnamed men by whose unflinching courage, in the depths of the caissons, and upon the suspended wires, the work was carried on amid storms, and accidents, and dangers, sufficient to appall the stoutest heart. To them we can only render the tribute which history accords to those who fight as privates in the battles of freedom, with all the more devotion and patriotism because their names will never be known by the world whose benefactors they are. One name, however, which may find no place in the official records, cannot be passed over here in silence. In ancient times when great works were constructed, a goddess was chosen, to whose tender care they were dedicated. Thus the ruins of the Acropolis to-day recall the name of Pallas Athene to an admiring world. In the Middle Ages, the blessing of some saint was invoked to protect from the rude attacks of the barbarians, and the destructive hand of time, the building erected by man's devotion to the worship of God. So, with this bridge will ever be coupled the thought of one, through the subtle alembic of whose brain, and by whose facile fingers, communication was maintained between the direct-

ing power of its construction, and the obedient agencies of its execution. It is thus an everlasting monument to the self-sacrificing devotion of woman, and of her capacity for that higher education from which she has been too long debarred. The name of Mrs. Emily Warren Roebling will thus be inseparably associated with all that is admirable in human nature, and with all that is wonderful in the constructive world of art.

This tribute to the engineers, however, would not be deserved, if there is to be found any evidence of deception on their part in the origin of the work, or any complicity with fraud in its execution and completion. It is this consideration which induced me to accept the unexpected invitation of the trustees to speak for the City of New York on the present occasion. When they thus honored me, they did not know that John A. Roebling addressed to me the letter in which he first suggested (and, so far as I am aware, he was the first engineer to suggest), the feasibility of a bridge between the two cities, so constructed as to preserve unimpaired the freedom of navigation. This letter, dated June 19, 1857, I caused to be printed in the *New York Journal of Commerce*, where it attracted great attention because it came from an engineer who had already demonstrated, by successfully building suspension bridges over the Schuylkill, the Ohio and the Niagara rivers, that he spoke with the voice of experience and authority. This letter was the first step towards the construction of the work which, however, came about in a manner different from his expectations, and was finally completed on a plan more extensive than he had ventured to describe. It has been charged that the original estimates of cost have been far exceeded by the actual outlay. If this were true, the words of praise which I have uttered for the engineers, who designed and executed this

work, ought rather to have been a sentence of censure and condemnation. Hence the invitation which came to me unsought, seemed rather to be an appeal from the grave for such vindication as it was within my power to make, and which could not come with equal force from any other quarter.

Engineers are of two kinds ; the creative and the constructive. The power to conceive great works demands imagination and faith. The creative engineer, like the poet, is born, not made. If to the power to conceive, is added the ability to execute, then have we one of those rare geniuses, who not only give a decided impulse to civilization, but add new glory to humanity. Such men were Michael Angelo, Leonardo da Vinci, Watt, Wedgewood, Brunel, Stevenson and Bessemer ; and such a man was John A. Roebling. It was his striking peculiarity, that while his conceptions were bold and original, his execution was always exact, and within the limits of cost which he assigned to the work of his brain. He had made bridges a study, and had declared in favor of the suspension principle for heavy traffic, when the greatest living authorities had condemned it as costly, and unsafe. When he undertook to build a suspension bridge for railway use, he did so in the face of the deliberate judgment of the profession, that success would be impossible. Stevenson had condemned the suspension principle and approved the tubular girder for railway traffic. But it was the Nemesis of his fate, that when he came out to approve the location of the great tubular bridge at Montreal, he should pass over the Niagara river in a railway train, on a suspension bridge, which he had declared to be an impracticable undertaking.

When Roebling suggested the bridge over the East river, his ideas were limited to the demands of the time, and controlled by the necessity for a profitable investment. He had no expectation that the

two cities would embark in the enterprise. Indeed, in one of his letters so late as April 14, 1860, he says, "As to the corporations of New York and Brooklyn undertaking the job, no such hope may be entertained in our time." In eight years thereafter, these cities had undertaken the task upon a scale of expense far exceeding his original ideas of a structure, to be built exclusively by private capital for the sake of profit.

How came this miracle to pass? The war of the rebellion occurred, delaying for a time the further consideration of Roebling's ideas. This war accustomed the nation to expenditures on a scale of which it had no previous conception. It did more than expend large sums of money. Officials became corrupt and organized themselves for plunder. In the city of New York, especially, the government fell into the hands of a band of thieves, who engaged in a series of great and beneficial public works, not for the good they might do, but for the opportunity which they would afford to rob the public treasury. They erected court-houses and armories; they opened roads, boulevards and parks; and they organized two of the grandest devices for transportation which the genius of man has ever conceived: a rapid transit railway for New York, and a great highway between New York and Brooklyn. The bridge was commenced, but the ring was driven into exile by the force of public indignation, before the rapid transit scheme, since executed on a different route by private capital, was undertaken. The collapse of the ring brought the work on the bridge to a stand-still.

It was a timely event. The patriotic New Yorker might well have exclaimed, just before this great deliverance, in the words of the Consul of ancient Rome, in Macaulay's stirring poem,

> "And if they once may win the bridge,
> What hope to save the town?"

Meanwhile, the elder Roebling had died, leaving behind him his estimates and the general plans of the structure, to cost, independent of land damages and interest, about $7,000,000. This great work which, if not "conceived in sin," was "brought forth in iniquity," thus became the object of great suspicion, and of a prejudice which has not been removed to this day. I know that to many I make a startling announcement, when I state the incontrovertible fact, that no money was ever stolen by the ring from the funds of the bridge; that the whole money raised has been honestly expended; that the estimates for construction have not been materially exceeded; and that the excess of cost over the estimates is due to purchases of land which were never included in the estimates, to interest paid on the city subscriptions; to the cost of additional height and breadth of the bridge, and the increase in strength rendered necessary by a better comprehension of the volume of traffic between the two cities. The items covered by the original estimate of $7,000,000, have thus been raised to $9,000,000, so that $2,000,000 represents the addition to the original estimates.

For this excess, amounting to less than thirty per cent., there is actual value in the bridge in dimension and strength, whereby its working capacity has been greatly increased. The carriage-ways, as originally designed, would have permitted only a single line of vehicles in each direction. The speed of the entire procession, more than a mile long, would therefore have been limited by the rate of the slowest; and every accident causing stoppage to a single cart, would have stopped everything behind it for an indefinite period. It is not too much to say that the removal of this objection, by widening the carriage-ways, has multiplied manifold the practical usefulness of the bridge.

The statement I have made is due to the memory not only of John A. Roebling, but also of Henry C. Murphy, that great man, who devoted his last years to this enterprise; and who, having, like Moses, led the people through the toilsome way, was permitted only to look, but not to enter upon the promised land.

This testimony is due also to the living trustees and to the engineers who have controlled and directed this large expenditure in the public service, the latter, in the conscientious discharge of professional duty; and the former, with no other object than the welfare of the public, and without any other possible reward than the good opinion of their fellow citizens.

I do not make this statement without a full sense of the responsibility which it involves, and I realize that its accuracy will shortly be tested by the report of experts who are now examining the accounts. But it will be found that I have spoken the words of truth and soberness. When the ring absconded, I was asked by William C. Havemeyer, then the Mayor of New York, to become a Trustee, in order to investigate the expenditures, and to report as to the propriety of going on with the work. This duty was performed without fear or favor. The methods by which the Ring proposed to benefit themselves were clear enough, but its members fled before they succeeded in reimbursing themselves for the preliminary expenses which they had defrayed. With their flight a new era commenced, and during the three years when I acted as a Trustee, I am sure that no fraud was committed, and that none was possible. Since that time the Board has been controlled by Trustees, some of whom are thorough experts in bridge building, and the others men of such high character that the suggestion of malpractice is improbable to absurdity.

The bridge has not only been honestly built, but it may be safely asserted that it could not now be duplicated at the same cost. Much money might, however, have been saved if the work had not been delayed through want of means, and unnecessary obstacles interposed by mistaken public officials. Moreover, measured by its capacity, and the limitations imposed on its construction by its relation to the interests of traffic and navigation, it is the cheapest structure ever erected by the genius of man. This will be made evident by a single comparison with the Brittania Tubular Bridge erected by Stephenson over the Menai Straits. He adopted the tubular principle, because he believed that the suspension principle could not be made practical for railway traffic, although he had to deal with spans not greater than 470 feet. He built a structure that contained 10,540 tons of iron, and cost 601,000 pounds sterling, or about $3,000,000. Fortunately he has left a calculation on record as to the possible extension of the tubular girder, showing that it would reach the limits in which it could bear only its own weight (62,000 tons), at 1,570 feet. Now, for a span of 1,595½ feet, the Brooklyn Bridge contains but 6,740 tons of material, and will sustain seven times its own weight. Its cost is $9,000,000, whereas a tubular bridge for the same span would contain ten times the weight of metal, and though costing twice as much money, would be without the ability to do any useful work.

Roebling, therefore, solved the problem which had defied Stevenson; and upon his design, has been built a successful structure, at half the cost of a tubular bridge that would have fallen when loaded in actual use. It is impossible to furnish any more striking proof of the genius which originated, and of the economy which constructed this triumph of American engineering.

We have thus a monument to the public spirit of the two cities, created by an expenditure as honest and as economical as the management which gave us the Erie Canal, the Croton Aqueduct, and the Central Park. Otherwise, it would have been a monument to the eternal infamy of the trustees and of the engineers under whose supervision it has been erected, and this brings me to the final consideration which I feel constrained to offer on this point.

During all these years of trial, and false report, a great soul lay in the shadow of death, praying only to stay long enough, for the completion of the work to which he had devoted his life. I say a great soul, for in the spring-time of youth, with friends and fortune at his command, he gave himself to his country, and for her sake braved death on many a well-fought battle-field. When restored to civil life, his health was sacrificed to the duties which had devolved upon him, as the inheritor of his father's fame, and the executor of his father's plans. Living only for honor, and freed from the temptations of narrow means, how is it conceivable that such a man—whose approval was necessary to every expenditure—should, by conniving with jobbers, throw away more than the life which was dear to him that he might fulfil his destiny, and leave to his children the heritage of a good name and the glory of a grand achievement? Well might this suffering hero quote the words of Hyperion: "Oh, I have looked with wonder upon those, who, in sorrow and privation, and bodily discomfort, and sickness, which is the shadow of death, have worked right on to the accomplishment of their great purposes; toiling much, enduring much, fulfilling much; and then, with shattered nerves, and sinews all unstrung, have laid themselves down in the grave, and slept the sleep of death, and the world talks of them while they sleep! And as in the

sun's eclipse we can behold the great stars shining in the heavens, so in this life-eclipse have these men beheld the lights of the great eternity, burning solemnly and forever !"

And now what is to be the outcome of this great expenditure upon the highway which unites the two cities, for which Dr. Storrs and I have the honor to speak to-day? That Brooklyn will gain in numbers and in wealth with accelerated speed is a foregone conclusion. Whether this gain shall in any wise be at the expense of New York, is a matter in regard to which the great metropolis does not concern herself. Her citizens are content with the knowledge that she exists and grows with the growth of the whole country, of whose progress and prosperity she is but the exponent, and the index. Will the Bridge lead, as has been forcibly suggested, and in some quarters hopefully anticipated, to the further union of the two cities under one name and one government? This suggestion is in part sentimental, and in part practical. So far as the union in name is concerned, it is scarcely worth consideration, for in any comparison which our national or local pride may institute between this metropolis and the other great cities of the world, its environment, whether in Long Island, Staten Island, or New Jersey will always be included. In considering the population of London, no one ever separates the city proper from the surrounding parts. They are properly regarded as one homogenous aggregation of human beings.

It is only when we come to consider the problem of governing great masses, that the serious elements of the question present themselves, and must be determined before a satisfactory answer can be given. The tendency of modern civilization is towards the concentration of population in dense masses. This is due to the higher and more diversified life, which

can be secured by association and co-operation on a large scale, affording not merely greater comfort and often luxury, but actually distributing the fruits of labor on a more equitable basis than is possible in sparsely settled regions, and among feeble communities. The great improvements of our day in labor-saving machinery, and its application to agriculture, enable the nation to be fed with a less percentage of its total force thus applied, and leave a larger margin of population free to engage in such other pursuits as are best carried on in large cities.

The disclosures of the last census prove the truth of this statement. At the first census in 1790 the population resident in cities was 3.3 per cent. of the total population. This percentage slowly gained at each successive census, until in 1840 it had reached 8.5 per cent. In fifty years it had thus gained a little over five per cent. But it 1850 it rose to 12.5 per cent., in 1860 it was 16.1 per cent.; in 1870 it was 20.9 per cent., having in this one decade gained as much as in the first fifty years of our political existence. In 1880 the population resident in cities was 22.5 per cent. of the whole population.

Contemporaneous with this rapid growth of urban population, have grown the complaints of corrupt administration and bad municipal government. The outcry may be said to be universal, for it comes from both sides of the Atlantic; and the complaints appear to be in direct proportion to the size of cities. It is obvious, therefore, that the knowledge of the art of local government has not kept pace with the growth of population. I am here by your favor to speak for the city of New York, and I should be the last person to throw any discredit on its fair fame; but I think I only give voice to the general feeling, when I say that the citizens of New York are satisfied neither with the structure of its government, nor with its actual administra-

tion, even when it is in the hands of intelligent and honest officials. Dissatisfied as we are, no man has been able to devise a system which commends itself to the general approval, and it may be asserted that the remedy is not to be found in devices for any special machinery of government. Experiments without number have been tried, and suggestions in infinite variety have been offered, but to-day no man can say that we have approached any nearer to the idea of good government, which is demanded by the intelligence and the wants of the community.

If, therefore, New York has not yet learned to govern itself, how can it be expected to be better governed by adding half a million to its population, and a great territory to its area, unless it be with the idea that a "little leaven leaveneth the whole lump." Is Brooklyn that leaven? And if not, and if possibly "the salt has lost its savor, wherewith shall it be salted?" Brooklyn is now struggling with this problem, it remains to be seen with what success; but meanwhile it is idle to consider the idea of getting rid of our common evils by adding them together.

Besides it is a fundamental axiom in politics, approved by the experience of older countries as well as of our own, that the sources of power should never be far removed from those who are to feel its exercise. It is the violation of this principle which produces chronic revolution in France, and makes the British rule so obnoxious to the Irish people. This evil is happily avoided when a natural boundary circumscribes administration within narrow limits. While, therefore, we rejoice together at the new bond between New York and Brooklyn, we ought to rejoice the more, that it destroys none of the conditions which permit each city to govern itself, but rather urges them to a generous rivalry in perfect-

ing each its own government, recognizing the truth, that there is no true liberty without law, and that eternal vigilance, which is the only safeguard of liberty, can best be exercised within limited areas.

It would be a most fortunate conclusion, if the completion of this bridge should arouse public attention to the absolute necessity of good municipal government, and recall the only principle upon which it can ever be successfully founded. There is reason to hope that this result will follow, because the erection of this structure shows how a problem, analagous to that which confronts us in regard to the city government, has been met and solved in the domain of physical science.

The men who controlled this enterprise at the outset were not all of the best type; some of them, as we have seen, were public jobbers. But they knew that they could not build a bridge, although they had no doubt of their ability to govern a city. They thereupon proceeded to organize the knowledge which existed as to the construction of bridges; and they held the organization thus created responsible for results. Now, we know that it is at least as difficult to govern a city as to build a bridge, and yet, as citizens, we have deliberately allowed the ignorance of the community to be organized for its government, and we then complain that it is a failure. Until we imitate the example of the Ring, and organize the intelligence of the community for its government, our complaint is childish and unreasonable. But we shall be told that there is no analogy between building a bridge and governing a city. Let us examine this objection. A city is made up of infinite interests. They vary from hour to hour, and conflict is the law of their being. Many of the elements of social life are what mathematicians term "variables of the independent order." The problem is, to reconcile these conflicting inter-

ests, and variable elements into one organization which shall work without jar, and allow each citizen to pursue his calling, if it be an honest one, in peace and quiet.

Now, turn to the bridge. It looks like a motionless mass of masonry and metal; but, as a matter of fact, it is instinct with motion. There is not a particle of matter in it which is at rest even for the minutest portion of time. It is an aggregation of unstable elements, changing with every change in the temperature, and every movement of the heavenly bodies. The problem was, out of these unstable elements, to produce absolute stability; and it was this problem which the engineers, the organized intelligence, had to solve, or confess to inglorious failure. The problem has been solved. In the first construction of suspension bridges it was attempted to check, repress and overcome their motion, and failure resulted. It was then seen that motion is the law of existence for suspension bridges, and provision was made for its free play. Then they became a success. The bridge before us elongates and contracts between the extremes of temperature from 14 to 16 inches; the vertical rise and fall in the center of the main span ranges between 2 ft. 3 ins., and 2 ft. 9 ins.; and before the suspenders were attached to the cable it actually revolved on its own axis through an arc of thirty degrees, when exposed to the sun shining upon it on one side. You do not perceive this motion, and you would know nothing about it unless you watched the guages which record its movement.

Now if our politcal system were guided by organized intelligence, it would not seek to repress the free play of human interests and emotions, of human hopes and fears, but would make provision for their development and exercise, in accordance with the higher law of liberty and morality. A large

portion of our vices and crimes are created either by law, or its mal-administration. These laws exist because organized ignorance, like a highwayman with a club, is permitted to stand in the way of wise legislation and honest administration, and to demand satisfaction from the spoils of office, and the profits of contracts. Of this state of affairs we complain, and on great occasions the community arises in its wrath, and visits summary punishment on the offenders of the hour, and then relapses into chronic grumbling until grievances sufficiently accumulate to stir it again to action.

What is the remedy for this state of affairs? Shall there be no more political parties, and shall we shatter the political machinery which, bad as it is, is far better than no machinery at all? Shall we embrace nihilism as our creed, because we have practical communism forced upon us as the consequence of jobbery, and the imposition of unjust taxes?

No, let us rather learn the lesson of the bridge. Instead of attempting to restrict suffrage, let us try to educate the voters; instead of disbanding parties, let each citizen within the party always vote, but never for a man who is is unfit to hold office. Thus parties, as well as voters, will be organized on the basis intelligence.

But what man is fit to hold office? Only he who regards political office as a public trust, and not as a private perquisite to be used for the pecuniary advantage of himself, or his family, or even his party. Is there intelligence enough in these cities, if thus organized within the parties, to produce the result which we desire? Why, the overthrow of the Tweed ring was conclusive evidence of the preponderance of public virtue in the city of New York. In no other country in the world, and in no other political system than one which provides for, and secures universal suffrage, would such a sud-

den and peaceful revolution have been possible. The demonstration of this fact was richly worth the twenty-five or thirty millions of dollars which the thieves had stolen. Thereafter, and thenceforth, there could be no doubt whether our city population, heterogenous as it is, contains within itself sufficient virtue for its own preservation. Let it never be forgotten that the remedy is complete; that it is ever present; that no man ought to be deprived of the opportunity of its exercise; and that, if it be exercised, the will of the community can never be paralyzed. Our safety and our success rest on the ballot in the hands of freemen at the polls, deliberately deposited, never for an unworthy man, but always with a profound sense of the responsibility which should govern every citizen in the exercise of this fundamental right.

If the lesson of the bridge, which I have thus sought to enforce, shall revive the confidence of the people in their own power, and induce them to use it practically for the election to office of good men, clothed, as were the engineers, with sufficient power, and held, as they were, to corresponding responsibility for results, then indeed will its completion be a public blessing, worthy of the new era of industrial development in which it is our fortunate lot to live.

Great indeed has been our national progress. Perhaps we, who belong to a commercial community, do not fully realize its significance and promise. We buy and sell stocks, without stopping to think that they represent the most astonishing achievements of enterprise and skill, in the magical extension of our vast railway system ; we speculate in wheat, without reflecting on the stupendous fact, that the plains of Dakota and California are feeding hungry mouths in Europe ; we hear that the Treasury has made a call for bonds, and forget that the rapid extinction of our national debt is a proof of

our prosperity and patriotism, as wonderful to the world, as was the power we exhibited in the struggle which left that apparently crushing burden upon us. If, then, we deal successfully with the evils which threaten our political life, who can venture to predict the limits of our future wealth and glory—wealth that shall enrich all; glory that shall be no selfish heritage, but the blessing of mankind. Beyond all legends of oriental treasure, beyond all dreams of the golden age, will be the splendor, and majesty, and happiness of the free people dwelling upon this fair domain, when fulfilling the promise of the ages and the hopes of humanity, they shall have learned how to make equitable distribution among themselves of the fruits of their common labor. Then indeed will be realized by a waiting world, the youthful vision of our own Bryant;

> "Here the free spirit of mankind at length,
> Throws its last fetters off; and who shall place
> A limit to the giant's untamed strength,
> Or curb its swiftness in the forward race!
> Far, like the comet's way through infinite space,
> Stretches the long untraveled path of light
> Into the depths of ages; we may trace
> Distant, the brightening glory of its flight,
> 'Till the receding rays are lost to human sight."

At the ocean gateway of such a nation, well may stand the stately figure of "Liberty enlightening the World;" and, in hope and faith, as well as gratitude, we write upon the towers of our beautiful bridge, to be illuminated by her electric ray, the words of exultation, *Finis coronat opus.*